In a final note, the Board added that the resolution of the broader implications of competition would not be appropriate for Docket 5608, but would be addressed at a later date in a generic investigation (namely Docket 5713).[31]

3. Procedural History of this Docket

This docket was opened on February 18, 1994, and a prehearing conference was held a month later, on March 17th. At that time, the investigation in Dockets 5700/5702 was in full tilt and early activity in this case was necessarily deferred. On June 14, 1994, I issued a *Prehearing Conference Memorandum*, setting a schedule for the filing of comments on the docket's procedural structure and other related matters.

In light of the comments submitted, I issued a procedural memorandum on December 22, 1994, detailing my proposal for the docket's organization and schedule. By this time, the final Order in Dockets 5700/5702 had been issued, requiring, among other things, that NYNEX conduct cost studies of its network and that the Hearing Officer in this docket oversee the management and ultimate use of those studies.[32] Consequently, the parties' comments on my December 22nd memorandum (filed in early February 1995) addressed not only procedural questions but also substantive ones with respect to NYNEX's cost study proposal.

On March 1, 1995, I issued an *Order Re: Procedural Schedule and Motions to Intervene*, breaking the docket into three major phases. Phase I addresses costing and pricing issues and the public service obligations which should be preserved in an open, fully competitive market. Phase II will focus on technological issues.[33] Phase III will review regulatory and other institutional issues, with specific attention to mechanisms for

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31. *Id.* at 95-96. The Board stated: "[W]e will include the issue of competition in local telephone service as a module in Docket No. 5713 . . . ."

32. Dockets 5700/5702, Order of 10/5/94 at 129.

33. Initially, it was intended to divide this phase into two modules: the first to look at intraLATA toll issues, trunk-side interconnection and transmission matters, and questions related to enhanced/information services ("content" services) and the switch; and the second to focus on local service issues. Since that time, I have asked the parties to consider consolidation of the two modules. Order of 10/27/95 at 1.

implementing state telecommunications and other public service policies. Also in that March 1st Order, I set a detailed procedural schedule and granted all motions to intervene.[34]

Several changes to the procedural schedule were made during the spring and summer of 1995, delaying the Phase I hearings by a little more than a month. A preliminary workshop was held on June 29th, followed by seven days of evidentiary hearings in July and August. Initial briefs were filed on October 6, 1995, and reply briefs were filed two weeks later, on October 20th.

C. Positions of the Parties

There are twenty-seven parties to this proceeding.[35] Not all of them participated actively in this phase of the docket. The particular and detailed positions that they advocated will be discussed in the relevant sections of this proposed decision. Here I simply wish to make several observations about their general positions.

All of the participants agree that competition in the local exchange will be beneficial to Vermont. It will provide incentives for companies to offer high quality service at the lowest possible cost, to expand service offerings, and to innovate in response to market demand. The parties also recognize that the Board has a role to play in this process, and that that role is critical to the orderly transition to a competitive telecommunications market in Vermont.[36]

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34. All but one of those motions were granted unconditionally. In the case of Design Access Network, I limited intervention to issues associated with the costing and pricing of E-911 services, GIS services, and Internet interconnectivity. Order of 3/1/95 at 14-15.

35. They are the Department, NYNEX, Frontier Communications of New England, Inc. ("Frontier"), Sprint Communications Company, L.P. ("Sprint"), Atlantic Cellular Company, L.P. ("Atlantic Cellular"), Hyperion Telecommunications of Vermont, Inc. ("Hyperion", together with Atlantic Cellular the "Alternative Technology Providers" or "ATP"), AT&T Communications of New England, Inc. ("AT&T"), MCI Telecommunications Corporation ("MCI"), Design Access Network, Inc. ("DAN"), Small Cities Cable Television, L.P., Small Cities Cable of Newport, Inc., Chittenden Community Television, Inc., Enhanced 911 Board ("E-911 Board"), Chittenden County Cable Access Advisory Board, Channel 17 Policy Board, Lake Champlain Access Television, Inc., and Vermont Access Network.

Also parties are Vermont's ten independent local exchange companies ("independent LECs," or "ILECs"). Nine of them participated jointly; they are Shoreham Telephone Company ("Shoreham"), Waitsfield-Fayston Telephone Company, Inc. ("Waitsfield"), Northfield Telephone Company, Ludlow Telephone Company, Perkinsville Telephone Company, Champlain Valley Telephone Company, Franklin Telephone Company ("Franklin"), Topsham Telephone Company ("Topsham"), and STE/NE Acquisition Corporation, d/b/a Northland Telephone Company of America ("Northland"). The tenth, Vermont Telephone Company, did not participate actively in this phase.

36. AT&T Brief at 7; NYNEX Brief at 7; DPS Brief at 8; and Frontier Brief at 9.

Noting their small sizes in relation to NYNEX, the independent LECs advocate the development of standards and requirements applicable to them that differ from those to be imposed on NYNEX.[37] There are, of course, particular issues over which the parties disagree; but, broadly speaking, this phase of the docket has been marked by substantial agreement on many issues. The parties share objectives, but differ in several ways on means.

Today's proposed decision is the culmination of Phase I of this investigation. The issues with which we have been struggling are by no means uncomplicated or of little moment. The efforts that the parties have so far put into this endeavor have been superb: incisive, professional, and cooperative. I am grateful to them.[38]

## III. FINDINGS OF FACT AND DISCUSSION

Based on the testimony and evidence presented in this phase of the docket, I hereby report, pursuant to 30 V.S.A. § 8, the following findings of fact and conclusions.

### A. General

Many of the parties in this case argue that monopoly organization of the telephony system, particularly the local exchange system, no longer serves the long-term public interest. They argue that, as the technology and economics of the telecommunications industry have rapidly evolved, much of the system no longer manifests the characteristics of a natural monopoly[39] and, furthermore, that an acknowledgement that certain components of the system

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37. Independents Brief at 5.

38. As I am to my colleagues at the Board for their assistance in putting together this proposed decision. Two in particular deserve especial thanks. Riley Allen and David Farnsworth dedicated many hours to the fair and thoughtful resolution of the issues raised in this phase of the docket, and also drafted large portions of this text.

39. Or, more accurately, of subadditivity, as described by William Baumol, which is to say that the minimum average cost of production occurs at a rate of output more than sufficient to supply the entire market at a price covering full cost. We generally think of a natural monopoly as an industry whose production function is characterized by a negatively sloped long-run average cost curve for all quantities of output, but this in fact is too narrow a definition. Simply, natural monopoly exists when a single firm can produce a desired level of output at a lower cost than any output combination of more than one firm. This is subadditivity, and it can occur even under conditions of rising marginal and average cost curves. *See* Gould and Ferguson, *Microeconomic Theory* (Homewood, Ill.: Richard D. Irwin, Inc., 1980) at 200, 248; and Yale Journal on Regulation, Vol. 10:3, 1993, at 67.

appear to be subadditive does not justify the continued treatment of the entire local exchange system as a regulated monopoly.[40]

State telecommunications policy, as expressed in the Department's 1992 *Ten-Year Telecommunications Plan* ("TYP" or "Plan"), also recognizes the changing environment. Specifically, the Plan states that:

> The two driving forces in the telecommunications arena are developments in technology and the resulting market response.
>
> . . .
>
> Some aspects of telecommunications remain monopolies, or effective monopolies. In those and, perhaps other areas, the fundamental need for price or service quality regulation and consumer protection remains, while we foster policies to encourage innovation and efficiency and to establish fair and effective competition.[41]

Given these changing circumstances, it is the purpose of this investigation to develop rules and mechanisms to allow for the competitive delivery of those local exchanges services that are amenable to competition. In this phase of the docket, the parties presented evidence and testimony on protocols for unbundling, pricing, interconnection, and basic service.[42]

## B. Unbundling

### 1. Definition and Purpose

"Unbundling" is the practice of identifying and disaggregating essential bottleneck components of the local exchange network into smaller parts which can, in turn, be individually priced, costed, and interconnected to provision all service offerings for sale by various market participants.[43] The goal of unbundling is to provide access, under reasonable

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40. *See* tr. 8/31/95 at 410-411.

41. TYP at ii.

42. At this point, a note on terminology is appropriate. Many and various references to local exchange companies—LECs—are made in this proposed decision. The terms are used in the following ways. Any provider of local exchange service is a LEC. Those companies currently providing such services in Vermont—NYNEX and the ten independent LECs that control "essential" facilities—are often described as "incumbent LECs" or, simply, "incumbents." Firms desiring to enter the local exchange market are called competitive LECs, or "CLECs," or sometimes "competitive providers" or "competitors." In general, the meaning of these terms should be clear from the contexts in which they are used. I should point out that, in a competitive market, all LECs (including the incumbents) will in fact become CLECs.

43. Riggert pf. at 3; Calabro pf. at 8.

terms and conditions, to useful parts of existing networks.[44] This will permit new entrants to lease capabilities from the unbundled network owner and to provide competitive services.[45] I note, however, that an initiative to unbundle the Vermont network should be taken for the benefit of ultimate consumers, rather than solely for the competitive advantage of market entrants.[46]

Unbundling permits entry without requiring the competitor to develop a complete telecommunications network for offering essential services.[47] Absent access to unbundled elements and the opportunity to repackage and resell them with other network elements, new entrants face significant barriers to market entry and are constrained in their ability to expand their networks.[48] There is general agreement among the parties that network unbundling will lower entry barriers and promote efficiencies in the network.[49]

2. Principles for the Unbundling Obligation

The objective of the unbundling effort will be to set forth network functions that are available on a tariffed basis at rates that (1) promote economic efficiency, (2) are not subsidized, and (3) are non-discriminatory and without preferential terms for select carriers.[50] Non-discrimination means the availability of a function to all takers, timely notification of costs and availability of unbundled functions, timely provisioning and repair, prompt and comprehensive disclosure of network changes, use of standard interfaces, maintaining privacy of customer information, and imputation.[51]

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44. Raymond pf. at 8.
45. *Id.* at 13; Calabro pf. at 8-9.
46. Raymond pf. at 13.
47. *Id.*; Calabro pf. at 9.
48. Ankum pf. at 3; and Calabro pf. at 8.
49. Absent unbundled services, new entrants would need to duplicate existing plant. Raymond pf. at 13.
50. Ankum pf. at 7. Network unbundling must be based upon the principal of non-discrimination. Raymond pf. at 16; Kahn pf. at 6; Taylor pf. at 51; Schoonover pf. at 22.
51. Raymond pf. at 17. For purposes of promoting economic efficiency, legitimate and verifiable cost-based differences among carriers may be reflected in wholesale prices so long as the drivers of those differences can not be captured through rate design. See Section III.D.4.d., Imputation. Ideally, the cost analysis of features and functions in the network should capture differences in costs in a manner that is consistent with cost drivers, and the tariff should reflect these differences. (Such legitimate and verifiable differences in costs among competing carriers should, however, be identified and made explicit by analysis of costs in the total service long-run incremental cost – "TSLRIC" – study.)

### 3. Identification of Network Elements to be Unbundled

#### a. The Unbundling Obligation: Scope of Services and Facilities

There is substantial agreement as to the necessity of unbundling the essential facilities of the monopoly provider.[52] I conclude that unbundling is only necessary for monopoly network elements.[53] Monopoly network elements have alternatively been referred to as "bottleneck" or "essential" facilities.[54] As such, I conclude that NYNEX and the independent LECs in Vermont shall have an obligation to unbundle all essential facilities consistent with the Department's proposal outlined below.

In order for unbundling to proceed, the emphasis which has been placed on the services that a network can provide must be refocused upon the functions that are aggregated in the course of providing service to a customer.[55] I adopt, therefore, the "functional approach" to unbundling proposed by the Department. These functions include the link, end-office switching, inter-office transport, tandem switching, and signaling.[56] In addition to the

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52. Calabro pf. at 8; tr. 8/30/95 at 50-51; tr. 8/31/95 at 15.

53. Ankum pf. at 7.

54. NYNEX recommended a three-part definition for essential facilities, as follows: (i) the input is essential to the supply of some other service; (ii) the service is exclusively supplied by the provider in question; and (iii) the provider and competitor compete with one another in the supply of some other service for which the service in question is an essential input. Taylor pf. at 52; tr. 8/31/95 at 138-39. I recommend that this definition be adopted as the test for an essential monopoly or bottleneck facility for the purposes of determining the network elements that should be unbundled. I also recommend, however, that the standard should be met throughout the service area of a given service provider (or the relevant area to which the service obligation applies). That is, an obligation to unbundle should apply throughout a service area in which it is offered, if it remains a monopoly facility in a portion of that service area, with the following clarification. I also conclude that the standard of "exclusively supplied" should recognize the practical economic impediments associated with accessing realistic competitive alternatives; that is, the access to an alternative provider should not merely be a theoretical one, but a practical one as well: that is, access to a viable competitive alternatives is provided. At the outset, I conclude that this obligation should extend to the categories of facilities and services identified below.

55. Raymond pf. at 18.

56. *Id.* at 19-21. The Department's proposal corresponded with or overlapped that of other parties in this case. The independent LECs grouped the services into four categories that included the following: (1) network access; (2) switching and switch functions; (3) transport-dedicated and switched services; and (4) ancillary services. Schoonover pf. at 23-24. MCI grouped services into categories of (1) network access, (2) switching and switch functions, and (3) transport. Exh. MCI-2. AT&T established six major groupings: (1) loop facility; (2) local serving wire center; (3) transport facility; (4) signaling facility; (5) operations support systems facilities; and (6) ancillary service facilities. Riggert pf. at 7.

five categories proposed by the Department, I include a category of "ancillary services" that provide other services and capabilities. Each function is briefly described below:

(1) Link: The "link" or end-user network connectivity includes basic network access, from customer premises to the home exchange switch or gateway to the network. "The demarcation point between the link and other network functions is that which first acts on the input provided by the user."[57]

(2) End-office switching: End-office switching "provides cross-connection between user and inter-office transport facilities or other users for the creation of a call path."[58] Each isolatable function within the end-office switching class may be available for unbundling.[59] End-office switching is "distinct conceptually from non-switch functions such as Basic Service Elements."[60]

(3) Inter-office Transport: "Inter-office transport" includes transmission functions between end offices or other trunk-side demarcations or between end-office switching to the tandem.[61] The paths may be configured as "switched" or "dedicated" transport, or as a "virtual dedicated" hybrid.[62]

(4) Tandem Switching: "Tandem switching" involves switched connection between a local network and an interexchange carrier ("IXC") network, and also between local networks."[63] While the switch function does provide some network management functions, such functions could be considered distinct from switching and be grouped with other signaling functions.[64]

(5) Signaling: Signaling provides network management and call processing functions independently of the switch. Signaling includes the following three elements of the network: Signaling Links that carry out-of-band signaling traffic between and among switches, signal transfer points, and signal control points; Signal Transfer Points ("STPs") that provide the function of connecting signal links; and Service Control Points ("SCPs") that contain customer specific information and processes information requests.[65]

(6) Ancillary Services: This is a general building-block category. At a minimum I will include the types of services that AT&T witness Riggert proposed.

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57. Raymond pf. at 19
58. *Id.* at 20.
59. *Id.*
60. *Id.*
61. *Id.* at 21.
62. *Id.*
63. *Id.*
64. *Id.*
65. *Id.*; Riggert pf. at 17.

These include call completion, call assistance, directory assistance, and access to E-911 services. I also include here operations support systems.[66]

I conclude that there should be a presumption that any category or service within the categories listed above constitutes an essential service. I recognize, however, that there are aspects of telecommunications services in Vermont within these categories that either are or can be competitively provisioned and, therefore, are not essential services.[67] Services that are no longer deemed "essential" in nature, and therefore are competitive, should not fall under an obligation for unbundling. I conclude that a formal unbundling process need not be established for service categories that are determined to be competitive. I believe that the Phase II workshops will also be potentially helpful in defining the range of services within these broad categories that should be considered "essential" in nature.[68] Incumbent LECs may petition the Board for a determination that a service no longer meets the standard of "essential facilities" as defined earlier.[69]

b. Criteria for Feature Unbundling

There is disagreement over the appropriate test for the unbundling of facilities and services that are not currently unbundled and offered to competitors and end-users. NYNEX argues that essential facilities should be unbundled but that its other services and facilities (*i.e.*, non-essential facilities) should be subject to discretionary unbundling when three criteria are met: technical feasibility, economic or financial viability, and sufficient demand.[70]

The Department recommends that the majority of network telecommunications facility categories be unbundled.[71] The Department recognizes that, either for reasons of changing

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66. Riggert pf. at 20-22; Schoonover pf. at 23-24.

67. I direct the parties, in Phase II, to propose a standard and an administratively efficient mechanism for establishing whether a service is essential.

68. I agree with the position of some parties that Phase III of this investigation will establish a standard for competition relevant to such determinations. Nevertheless, I believe that Phase II can be useful in identifying and narrowing the range of features or functions that can generally be acknowledged to be "non-essential" based on the criteria established here.

69. The burden of proof for such a determination should rest with the incumbent LEC.

70. Calabro pf. at 9-10.

71. Specifically: the Link, End-Office Switching, Tandem Switching, Transport, and Signalling. Raymond pf. at 19-22.

demand or service opportunities, unbundling should evolve as a dynamic requirement.[72] For identifying specific elements to be unbundled, the DPS proposes a test whose criteria resemble the first and third elements of NYNEX's test: respectively, technical feasibility and adequate demand.[73] In addition, the Department recommends that there be a presumption of demand for functions that NYNEX has unbundled in other states or in the federal jurisdiction.[74]

The independent LECs recommend that unbundling should not be required until a *bona fide* request is made by a potential competitive service provider.[75] They further argue that the technical and economic feasibility criteria should be met before the requested unbundling is required.[76]

The standard put forth by MCI is to require the incumbent LEC to unbundle "down to the level of the smallest piece of network that can be separately identified and tariffed for prospective users."[77] AT&T recommends disaggregation of the local exchange into Basic Network Functions ("BNFs") based on four criteria which emphasize uniformity across networks and consistency with existing network architecture: (1) the feature must have a clearly identified and standard interface; (2) it must be (or potentially be) measurable and billable; (3) it must use transmission protocol and physical interconnection standards of an acknowledged industry body; and (4) it must have the potential to be provisioned by a competitive service provider.[78]

I conclude that the Department's test for identifying the specific unbundled service elements or Basic Network Functions, *i.e.*, the BNFs, is reasonable.[79] All requests for unbundling of the incumbent's network should meet these two criteria:

(1) Technical Feasibility: The requested feature or service should be available on a stand-alone basis and measurable for purposes of billing separately from other network functions. Where the function can be isolated in more than one

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72. *Id.* at 14.
73. Raymond reb. pf. at 16-17.
74. Raymond pf. at 23-24.
75. Schoonover pf. at 25.
76. *Id.* at 25.
77. Ankum pf. at 3.
78. Riggert pf. at 6.
79. I conclude that the concept of financial viability as proposed by NYNEX is vague and probably overlaps with technical feasibility and demand standards that I have adopted in this proposed decision.

way, the party making the request should be free to choose from among them. Technical feasibility should also include considerations of network reliability and impacts on network performance.[80]

(2) Adequate Demand: There should be adequate demand, or a rational expectation of adequate demand, for the feature or function at reasonable prices sufficient to cover the incremental costs of provisioning the feature for resale.[81]

I conclude that the availability of a feature or function in another of the jurisdictions in which NYNEX (or the independent LEC) operates should establish a rebuttable presumption of demand sufficient to trigger a mandatory unbundling requirement in Vermont.[82]

I also conclude that the widespread availability of a function or service in Vermont by an incumbent LEC, together with a *bona fide* request for the function by a potential competitive service provider in Vermont, should constitute a rebuttable presumption of demand for the unbundling of that function or service.[83]

At this time, I find that there is an inadequate basis in the record to conclude that either of the specific proposals of MCI and AT&T should be adopted as a minimum standard for unbundling. I believe that the workshops in Phase II will provide an appropriate forum for screening features and functions against the criteria established here. At this point, I recommend that the parties include the features and functions identified in the Oregon Building Block proposal in their consideration of features and functions appropriate for unbundling.[84]

Also in Phase II, I will encourage development of unbundled service elements that are, to the greatest extent possible, consistent with the basic network functions recognized in other jurisdictions. It seems sensible from the standpoint of promoting standard interfaces, and also

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80. Raymond pf. at 16.

81. I direct NYNEX and the Independent LECs, in Phase II, to propose a definition for "adequate demand", as well as an administrable test for determining whether an unbundling request meets the standard.

82. This standard of a "rebuttable presumption" characterized here and below is consistent with the request for a waiver process of the independent providers. Schoonover pf. at 26.

83. A *bona fide* request here refers to any request for service by a certified telecommunications service provider in Vermont who is willing to cover the incremental costs of wholesale service provisioning (either under tariff or on an individual case basis) or is willing to make a term commitment to purchase the service.

84. Tr. 8/29/95 at 231-233.

of fostering conformity among jurisdictions, thereby facilitating the entry into the Vermont market of providers that are competing in other jurisdictions.

4. Processes for Future Unbundling Requests and Dispute Resolution

I conclude that a process for reviewing unbundling requests similar to the FCC ONA model should be adopted for Vermont.[85] Such a process is as follows:

(1) A written request for unbundling will be reviewed by the facilities-based LEC, to determine if the request is technically feasible using existing or planned technology.[86]

(2) Within 120 days of submission of a complete request, the incumbent LEC will indicate if the service or function can be offered, the timeframe in which it will be made available, the estimated rate (assuming demand meets the requesting party's projections), and other potential technical issues that the request may raise.[87]

(3) If it is determined that the requirements for an unbundled facility are not sufficient to encourage the incumbent to offer the facility under tariff, deployment of some of the capabilities may be possible on a case-by-case (and cost-to-provide) basis.[88]

(4) If the requesting party believes it is aggrieved by the incumbent's decision, it would have thirty (30) days in which to file a petition with the Board, for hearing on the matter.[89]

5. Reciprocal Unbundling Requirements

There was broad agreement among many of the parties that the obligation to unbundle should be reciprocal with respect to carriers requesting interconnection.[90] I conclude that, over time, this obligation will enhance the efficiency of the network. I conclude, however, that this obligation should apply (1) only to those portions of the network that are interconnected to that of the incumbent LEC and (2) only to the extent that the facilities of the

85. Calabro pf. at 14; tr. 8/29/95 at 7-8; Raymond reb. pf. at 21-22.

86. Calabro pf. at 14.

87. *Id.* The 120-day period is supported by the evidence, but it seems possible that this period could be significantly shortened. The parties will consider this question further in Phase II.

88. *Id.*

89. *Id.*

90. Raymond pf. at 17

newly established carrier permit. I conclude that no obligation to perform cost studies by these competing carriers should be required. So long as the service in question is not essential, it should not be subject to the other pricing and unbundling rules recommended herein.[91]

6. Relief from Unbundling Requirements

Unbundling obligations should continue until such time as a market for a feature is truly competitive.[92] Relief from unbundling obligations should also be available in instances where the standard of either technical feasibility or adequate demand is no longer met. Approval of the Board will be required before an incumbent LEC may discontinue providing any of the unbundled service elements that are mandated as a result of this investigation or that emerge in accordance with the criteria for mandatory unbundling set out herein.

C. Pure Resale

Pure resale describes a CLEC's wholesale purchase of services from an established facilities-based provider (such as an incumbent LEC) and resale of those services to its own end-users without utilizing any of its (the CLEC's) own facilities.[93] There was substantial agreement among the parties that resale opportunities will help new firms enter the Vermont market.[94] AT&T observes that economically viable resale will be a critical requirement should the Board order CLECs to serve given geographic areas.[95] MCI recommends that the Board eliminate all resale restrictions and require LECs to allow entrants to purchase their end-user services. MCI further recommends that wholesale services should be equivalent in quality to the incumbent's equivalent retail services.[96]

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91. Cornell reb. pf. at 15-16.
92. Raymond pf. at 21.
93. Salvatore pf. at 11-12.
94. *Id.* at 11.; tr. 8/30/95 at 272; Ankum pf. at 6; DPS Brief at 51.
95. AT&T Brief at 30.
96. MCI Brief at 5. MCI notes in its Brief that "although Rochester Telephone ("RTC") has been developing a resale product for the last two years, the product that Rochester telephone offers . . . has numerous technical and operational impediments which degrade the overall service quality of its resale product" and place competitors at a disadvantage.

As a general matter, I believe that the availability of reasonably priced products for resale will reduce barriers and thereby facilitate market entry for new firms.[97] Resale will promote local exchange competition by providing a vehicle by which CLECs can enter the market quickly and easily.[98]

As set out in Section III.F., I expect to recommend the establishment of geographic service area obligations for CLECs that are certified to receive universal service funding. Absent resale, it is unlikely that any CLEC would be able to meet, at least early on, a requirement to offer service throughout a specified geography; consequently, without resale, a service area obligation would pose a potentially significant, probably overwhelming, barrier to entry.[99]

The record suggests that resale restrictions will likely be unsustainable in a competitive environment. Such restrictions are generally inconsistent with the requirements for unbundled network services established elsewhere in this proposed decision and, furthermore, that they would impose an unnecessary barrier to entry. I conclude that, once the terms and conditions for entry into the market for local service have been established, resale restrictions on local service should be removed.[100] I also conclude that such wholesale service should be of a character and quality comparable to that of the incumbent LEC's retail service. Consistent with the recommendations for cost and pricing in Section III.D., resold local service should be made available at rates either built up from the relevant "building blocks" or discounted by an amount that, at a minimum, reflect the differences in cost between wholesale and retail provision of the service.[101]

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97. Ankum pf. at 6.

98. AT&T Brief at 28; Salvatore pf. at 11; tr. 8/30/95 at 270-271.

99. Tr. 8/30/95 at 272; Salvatore pf. at 11.

100. This is a general proposition, but it deserves more detailed examination in Phase II. It is conceivable that removal of all restrictions on resale could create unintended and adverse effects. I seek comment, therefore, on any categories or aspects of service for which a resale restriction in some form should remain, if only during a transition period. By way of example, there may be reasons to perpetuate class restrictions on resale (*i.e.*, resale of residential service to business customers).

101. In providing wholesale rather than retail, the incumbent LEC will avoid at least the following: (1) uncollectables; (2) billing and collection; (3) service order processing; (4) sales; and (5) product marketing. Salvatore pf. at 13.

If the resale service were offered at wholesale rates that were greater than the costs incurred by the incumbent (or essential facilities provider) and above permitted local service price ceilings, then any support

(continued...)

In Phase II of this investigation, with the intent of devising clear and workable rules for resale, the parties shall comment on the following:

- Categories or aspects of service for which resale restrictions should continue;
- Establishment of specific service obligations for pure resale of local basic service by incumbent LECs;
- The specific aspects and assurances needed to provide a wholesale basic service package of comparable quality to that of the incumbent LEC;
- The extent to which the incumbent LEC should be obligated to provide end-user services (*e.g.*, billing and collection) that could potentially be competitive in nature.

## D. Costing and Pricing Issues

In Dockets 5700/5702, the Board established the total service long-run incremental cost ("TSLRIC") methodology as the appropriate cost basis for purposes of setting price floors and protecting against anti-competitive practices, such as the cross-subsidization of competitive offering with monopoly rents.[102] In this proposed decision, I reaffirm that conclusion of the Board. Also, I recommend a set of additional rules by which wholesale and retail pricing should be guided during the transition to a more competitive local exchange market.

### 1. Purpose

The primary purpose of establishing costing and pricing rules is to prevent competitive pricing abuses by the monopoly provider of essential facilities. Preventing such market abuses will promote an economically efficient and effective market for telecommunications

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101. (...continued)
payments associated with universal service would need to flow to the reseller, not the incumbent. If the incumbent were required to offer local service for resale at rates below cost, any universal service payment would be made to the incumbent.

102. In the final Order in Docket 5700/5702, the Board states: "Setting prices for NET's services and bottleneck monopoly inputs on the basis of [TSLRIC] is necessary to assure reasonable competition." Docket 5700/5702, Order of 10/5/94 at 128. As for the incentive to cross-subsidize, ATP witness Cornell pointed out that it "is really an artifact of regulation" and is not behavior that unregulated monopolists generally would engage in, since to do so is to sacrifice profits to a competitive endeavor from which it is highly unlikely that they would ever be recovered. Tr. 8/29/95 at 107. No evidence was presented that established that NYNEX is currently engaging in such cross-subsidization. *Id.* at 108.

services.[103] Establishing appropriate rules for exchange of services among competing providers will also reduce the costs and uncertainties of CLECs entering Vermont's telecommunications market. Such requirements, however, may not be necessary over the long term once a fully competitive market has been developed.

2. Theory of Cost and Price

It is a general rule of economics that prices should reflect and, to the extent possible, fully cover the incremental costs of providing a service. Meeting this rule is necessary to achieving the goal of economic efficiency: mismatches of price with the incremental cost of production (which equals the value of other goods or services foregone when that particular consumption decision is made) will result in misallocation of society's resources.[104] Put another way, incorrect prices falsely represent the cost to society of producing the good demanded, which in turn leads to either over- or under-consumption of that good. The Board has long accepted these general principles and has striven to set prices according to them.[105]

With respect to regulated monopolies, prices should also give existing carriers an opportunity to recover their embedded (historic total) costs.[106] Such costs are relevant only so

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103. The witnesses in this docket used the term "efficiency" in several ways, consistent with standard economic theory. In this proposed decision, I have done the same, as follows: "Economic efficiency" refers to efficiencies in the consumption or production of goods and services; social welfare is improved as economic efficiency is increased. More specifically, I am referring to (1) efficiencies in consumption arising from the allocation of goods, (2) efficiencies in production arising from the allocation of inputs to the production process, and (3) other production efficiencies, or X-efficiencies, arising from how nearly management maximizes output for a given level of inputs. *See* Layard and Walters, *Micro-Economic Theory* (New York, NY; McGraw Hill Book Company, 1978) at 7-14 and 252-255. "Static efficiency" refers to allocative efficiencies associated with a restrictive set of assumptions at a given point in time. As used here, "dynamic efficiency" refers to those efficiencies (including innovation and technological development) that arise over time from the stimulus of competition in an environment of flux.

104. Economic efficiency is met in this way: so, in my view, is fairness. Those who cause a cost to be incurred ought also, as a general matter, be required to pay those costs. Nevertheless, there may very well be circumstances that warrant deviations from this rule, as a matter of public policy.

105. *See, eg.*, Docket 5426, Order of 7/22/92 at 10-28. In particular, at page 11, the Board states that "The critical point is that, to the greatest extent possible, price should approximate marginal cost, since marginal cost reflects the true value to society of allocating its resources to the particular good demanded." *See also* Dockets 5700/5702, Order of 10/5/94 at 117-120.

106. Taylor pf. at 25-26 and 27. This goes directly to questions of fairness and the financial well-being of the regulated firm. To the extent that certain aspects of the telephone system are characterized by declining production costs across the full range of demand, they differ from firms in competitive markets: prices set at incremental cost will fail to generate revenues sufficient to cover a firm's total costs. *See* Footnote 39.

long as their recovery is deemed appropriate by standards of recovery in rate-setting and is consistent with the obligations of the service providers.[107]

Pricing rules are needed here to guard against price discrimination, cross-subsidies, and other potential market abuses.[108] With respect to price discrimination, the incumbent LEC should charge itself rates for services that are no less than those it charges competing providers (*see* Section III.D.4.c., Imputation, below).[109] The price for a service should be no less than the TSLRIC of that service, unless there is explicit public policy reason for doing otherwise (*see* Section III.D.3., following).[110]

3. Cost Studies

Setting prices appropriately in regulated markets requires, in the absence of competitive pressures to drive prices down to costs, the production of forward-looking cost studies.[111] Forward-looking cost studies provide the information necessary to set prices for new and existing services and/or functions.[112] Forward-looking cost studies also may be used to examine cross-subsidies (*i.e.*, whether revenues from one service are covering the costs of

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107. This, of course, is not a guarantee of cost recovery, and therefore it gives a company some incentive to manage its cost efficiently.

108. Even here, our purpose is to capture efficiencies in the market, rather than necessarily pursue fairness to competitors. Inefficiencies in production, for example, may arise from the inability of efficient alternative providers (with a competitive advantage) to enter and compete against artificially depressed prices unrelated to the cost of producing the services by the incumbent on a forward-looking basis. Cost-based pricing of wholesale will help avoid inefficient duplication of scarce resources. Weiss reb. pf. at 6. For issues of efficiency, prices should not deviate substantially from the underlying costs. Taylor pf. at 15.

109. Ankum pf. at 17-19.

110. Weiss pf. at 7.

111. In a competitive market, prices are set according to the laws of supply and demand. If the market is efficient, price will equal the incremental cost of production.

112. Weiss pf. at 8; Ankum, pf. at 11; and Salvatore pf. at 3-4. If a cost can be avoided by a decision not to produce a good or service, then it is "forward-looking." It is also assumed that a forward-looking cost is based on the least-cost technology to be used in order to meet demand for a particular service. Again, the issue is one of determining what resources are to be dedicated to meeting demand for service. Resources that have already been deployed are of no relevance to pricing, since their costs have already been incurred, or "sunk"; for the regulator and economist the question is: what additional (or incremental) resources will be necessary to meet expected demand over the long-term? It is the costs of these resources (capital, operating, and labor) that should be reflected in prices

another) where such subsidies are unwarranted.[113] Where subsidies are deemed appropriate, forward-looking cost studies can be used to determine the magnitude of the subsidy.[114]

a. Cost Study Methodology

The evidence in this docket, like that in Dockets 5700/5702, demonstrates that prices should be based on the total service long-run incremental cost of producing a service and that studies are necessary to establish the TSLRICs of NYNEX's relevant services.[115] The parties all agree that TSLRIC is the appropriate methodology for identifying cross-subsidies, although NYNEX maintains that TSLRIC is appropriate for that purpose *only* and that the long-run incremental cost ("LRIC") methodology provides the correct test for establishing a floor on prices.[116] Most other parties in this investigation disagreed with the position of NYNEX, arguing that TSLRIC represents the appropriate floor for prices.[117] The Department noted that, until a truly competitive market has been created, it would be improper to rely on LRIC as the price floor.[118]

On the basis of the evidence, I conclude that a study of service costs using the TSLRIC methodology is appropriate, and that the results of such a study should be used for the purposes of testing for cross-subsidies and determining price floors. There is no dispute with respect to cross-subsidization: all the parties agree that a service that does not generate revenues to cover its costs must, if it continues to be offered, necessarily be subsidized by other revenue sources. As for setting price floors, the evidence establishes that TSLRIC, not

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113. Ankum pf. at 12.

114. Weiss pf. at 7.

115. The TSLRIC of a particular product (say, "Service A") is defined as the difference between the total cost of producing the *entire* output of a firm (that is, all its goods and services, including Service A) minus the total cost of producing the firm's entire output, excluding Service A. Tr. 8/28/95 at 131; tr. 8/29/95 at 111-114. By definition, TSLRIC is forward-looking and consists of least-cost technology. Refer to Appendix I for relevant definitions and more detailed description of key elements of the methodology.

116. Salvatore pf. at 4-9; Kahn reb. pf. at 2-4; Cornell reb. at 3-5; Weiss pf. at 6, 15; Weiss reb. pf. at 6-8; Ankum pf. at 11-17; Taylor pf. at 19; Taylor reb. pf. at 10-11 and 13; tr. 8/28/95 at 113; and tr. 8/29/95 at 110. However, NYNEX conceded that the practical differences between LRIC and TSLRIC should generally be "minimal." The record suggests that forward-looking service specific fixed costs will be small relative to the total costs of the service. Taylor pf. at 23-24 and Taylor reb. pf. at 13-14. *See also* Dockets 5700/5702, Order of 10/5/95 at 119-120, fn. 44.

117. Salvatore pf. at 4-9; Kahn reb. pf. at 2-4; Cornell reb. at 3-5; Weiss pf. at 6, 15; Weiss reb. pf. at 6-8; Ankum pf. at 11-17; tr. 8/28/95 at 113; and tr. 8/29/95 at 110.

118. Weiss pf. at 12-13.

LRIC, is the appropriate methodology because, in an environment of declining costs and unrestricted resale, arbitrage opportunities would ultimately undermine the ability of the incumbent carrier to cover its costs.[119]

Only the incumbent LECs should be required to produce cost-support for their prices.[120] However, with respect to the independent LECs, the evidence also suggests that the costs of performing cost studies may be very high in relation to their costs of service.[121] I recommend, therefore, that the independent LECs should be given added flexibility in meeting their obligations. I recommend several options:

(1) An ILEC may perform its own cost study of a given service or function;
(2) It may rely on the results of the NYNEX study;[122] or

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119. Cornell reb. pf. at 4. In reaching this conclusion, I do not have to reject the proposition that LRIC, rather than TSLRIC, may actually be the correct test from the narrow perspective of economic efficiency in the absence of resale opportunities. Taylor pf. at 29. It is merely a question of the slope of the supply curve and the sustainability of the firm over the long-term. Tr. 8/29/95 at 237; tr. 8/31/95 at 412-413. Prices at TSLRIC are necessary to ensure recovery of fixed costs and average volume-sensitive costs where economies of scope or scale are manifest and opportunities for resale exist. It therefore may be viewed as a "second best" solution from the standpoint of economic efficiency, but proper nonetheless given legitimate concerns for overall cost recovery. In any case, I believe that the arbitrage opportunities created by allowing an incumbent LEC to price an essential service at less than its TSLRIC would ultimately force the LEC to abandon such a policy and offer the service to all comers only at TSLRIC. (If an CLEC or end-user were able to purchase a service at a price below TSLRIC, it would have an incentive to resell that service to others of the incumbent's customers who are paying at or above TSLRIC; in the face of such a threat, one presumes that the incumbent would cease offering the service at less than TSLRIC.) I must emphasize that it is not to assure the maintenance of prices at TSLRIC that led me to conclude that restrictions on resale should be abolished. As I indicated earlier, resale restrictions are a barrier to competitive entry. It also happens that resale creates arbitrage opportunities that force prices in line with costs, which is of course a preferred outcome. Tr. 8/29/95 at 231-235.

The evidence in this case suggests that economies of scope or scale generally exist in the provision of telecommunications services. Taylor pf. at 29. This fundamental point, however, has not yet been established; indeed, it requires that the cost studies be performed. Nevertheless, the argument that non-network costs (*e.g.*, certain categories of ancillary services, such as billing and collection) are declining and are therefore susceptible to these same concerns is less persuasive. If it can be demonstrated that the incremental cost of delivery of either network or non-network service rises above its per unit average costs (*i.e.*, TSLRIC), then LRIC may be the appropriate methodology for determining the price floor. As a practical matter, it appears that the differences between the two methods are minor and, therefore, that the TSLRIC of a service should generally suffice as the relevant floor. Where differences between the two are significant, then the relevant pricing floor should be the greater of LRIC and TSLRIC.

120. Weiss pf. at 5.

121. *Id.*; tr. 8/31/95 at 325-326, 392-394.

122. Weiss pf. at 5. The results of the NYNEX studies should provide a reasonable proxy for independents' costs. *Id.* at 7. Potential differences between the costs of NYNEX and of the independent LECs should be able to be accounted for by ensuring that the NYNEX study appropriately differentiates costs by

(continued...)

(3) It may perform a separate study in cooperation with other Vermont ILECs.

b. Principles to Guide the Performance of the Cost Studies

The evidence demonstrates that the following principles should be adopted for purposes of identifying costs under the TSLRIC methodology:[123]

- Cost causation: The relevant costs are those that would be incurred if an activity were undertaken or saved if the activity were discontinued.[124]
- Least Cost: Estimates of costs should reflect the overall least-cost technology for the network.[125]
- Existing Network Configuration: The current location (or current planned changes in the location) of local switch centers should be used in estimating costs.[126]
- Long-Run: Long-run means that all inputs are avoidable.[127]
- Total Service Increment: The relevant increment of demand is the entire range of demand for a particular function or service.[128]
- Costs Defined and Determined at the Building Block Level: Service level costs should ideally be built up from the component building blocks or unbundled functions. This avoids the problem of using different costs for similar services as a consequence of differences in historic usage patterns.[129]
- Factors and Loadings: Factors and loadings should be applied to capture costs that cannot be easily identified directly. (Factors and loadings consist of annual cost factors and investment loadings.)[130]

c. NYNEX's Cost Study Proposal

The evidence in this docket demonstrates that NYNEX's proposed cost study, submitted in December 1994, does not meet the requirements set out in the final Order in

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122. (...continued)
causal drivers. If costs are differentiated by cost drivers, then the results can be applied to smaller companies (assuming no other reason to doubt their applicability). The cost studies performed in Texas, Michigan and Oregon included density and loop length as cost drivers in determining the costs of the local loop. Tr. 8/28/95 at 131-132.

123. To the extent that LRIC is determined to be the relevant floor for purposes of setting a price, then, except with respect to the increment of demand, the same principles should generally apply.

124. Ankum pf. at 16-17; Taylor pf. at 15; exh. H-6.

125. Ankum pf. at 16-17; Tr. 8/28/95 at 131.; exh. H-6.

126. Tr. 8/28/95 at 48; Ankum pf. at 16-17; exh. H-6.

127. Ankum pf. at 16-17; exh. H-6.

128. Taylor pf. at 9; Ankum pf. at 16-17; exh. H-6.

129. Ankum pf. at 16-17; exh. H-6.

130. *Id.*

Docket 5700/5702.[131] The evidence on this point was extensive and unrebutted. Several flaws in the proposal were enumerated, among them the following:

- NYNEX does not specify in sufficient detail the services and functions that it intends to study.
- NYNEX should inform the parties and Board of its future network plans, which are necessary to determining the appropriate architecture to be evaluated.
- NYNEX's proposal does not adequately explain how shared costs will be quantified and treated in the study.[132]

For these reasons, I recommend that the Board not accept NYNEX's proposed cost study methodology until it is amended to resolve the disputed issues and incorporates other relevant principles set out in this proposal for decision.

NYNEX is still under order to perform the appropriate studies, and they should examine *all* of its services and functions.[133] I believe that those studies will be most expeditiously developed and conducted if, early in Phase II of this docket, the parties engage in a collaborative design process. To that end, I strongly encourage the parties to consider the cost-study methodology developed in Oregon as a basis for refining the NYNEX proposal, in particular, for defining the appropriate building blocks.[134] I will invite comment on this suggestion at the beginning of Phase II.

I must note, however, that I share the concerns of the ATP that to proceed in this fashion may invite additional and unnecessary delay.[135] I therefore recommend that the Board direct NYNEX to file its modified cost study proposal within sixty days of this Order, regardless of whether discussions with other parties have borne fruit. That proposal will also set a date for the completion of the cost studies.

4. Pricing

It is clear from the previous discussion that the wholesale and retail prices of the incumbent's services and network functionalities are inextricably interrelated. All the parties

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131. Weiss pf. at 17; exhs. H-5 and H-6.

132. Weiss pf. at 17-31.

133. *Id.* at 7-8.

134. Tr. 8/29/95 at 231-233. The record suggests that this methodology was developed with a broad array of interests represented and that it has served as a model in other jurisdictions.

135. ATP Brief at 13.

agreed that fair and efficient competition depends critically on the rules for setting these prices. In the main, the parties also agreed on the constituent elements of wholesale and retail prices; however, there was one crucial area of disagreement—with respect to the wholesale pricing of essential services—that requires more detailed examination and resolution.

For the analysis that follows, it is helpful to have in mind the mathematical elements of wholesale and retail prices. On the basis of the evidence in this docket, the following three equations, which describe the possible components of wholesale and retail prices for both the incumbent LEC and CLECs, can be derived:[136]

(1) $\text{Retail}_{\text{LEC}} = \text{TSLRIC}_{\text{BNF}} + \text{TSLRIC}_{\text{BNF}\rightarrow\text{LEC}} + \text{TSLRIC}_{\text{LEC Retail}} + \text{Mark-Up}_{\text{LEC}}$

(2) $\text{Wholesale}_{\text{LEC}\rightarrow\text{CLEC}} = \text{TSLRIC}_{\text{BNF}} + \text{TSLRIC}_{\text{BNF}\rightarrow\text{CLEC}} + \text{TSLRIC}_{\text{Wholesale}} + \text{Mark-Up}_{\text{LEC}}$

(3) $\text{Retail}_{\text{CLEC}} = \text{Wholesale}_{\text{LEC}\rightarrow\text{CLEC}} + \text{TSLRIC}_{\text{CLEC Retail}} + \text{Mark-Up}_{\text{CLEC}}$

The notations deserve some explanation. Equation (1) shows the make-up of a LEC's retail price for a service that requires utilization of an essential basic network function or service.[137] The retail price is the sum of the TSLRIC of the BNF, the LEC's TSLRIC of actually providing the BNF to itself, the TSLRIC of providing to an end-user a retail service that utilizes the BNF, and finally any appropriate mark-up for common costs and accounting profits (*i.e.* the remaining revenue requirement).

Equation (2) details the cost elements of providing the BNF to the LEC's competitors. It differs from equation (1) in two respects. First is the cost that the LEC incurs to provide the BNF to the CLEC, which avoids a like (but not necessarily equal) cost of providing the BNF to itself. And second are any other incremental costs associated with providing the BNF at wholesale (*e.g.*, marketing, contracting, etc.). Lastly is the LEC's mark-up for common costs and profits (not necessarily the same as that in the LEC's retail price)[138]; the calculation

136. Exh. NYNEX-7; exh. AH-2; exh. DPS-4; Taylor pf. at 23-29; tr. 8/29/95 at 243-249; tr. 8/31/95 at 320-323, 363-370, 414; *see also* Dockets 5700/5702, Order of 5/10/94 at 117-124.

137. The formulas refer to the costs of providing a BNF, but apply also to the costs of providing an essential service. The one subscript was used merely for simplicity's sake.

138. Tr. 8/31/95 at 367-369.

of this mark-up and its inclusion in the wholesale price is the controversial issue at the heart of this debate.[139]

Equation (3) describes the price charged by the CLEC for the same retail service provided by the LEC in equation (1).

a. Pricing Wholesale Services and Unbundled Service Elements

All the parties agreed that wholesale services and functions should be priced in accordance with a set of rules that are fair and will prevent competitive abuses. In the main, the parties also agreed on the general make-up of those guidelines. The evidence in this docket demonstrates that the following wholesale pricing rules are reasonable, and I recommend that the Board adopt them:

(1) TSLRIC: Prices for wholesale services shall be set at or above their TSLRIC, unless there is an explicit public policy to do otherwise.[140]
(2) Non-discrimination: The incumbent LEC shall not offer prices to itself or competing carriers at levels lower than those it charges other carriers that potentially compete for the same retail customers.[141] *See* Sections III.B.2. and III.D.4.d.
(3) Imputation: In order to prevent competitive pricing abuses, the imputation standards established for determining the boundary relationship between a retail floor or a wholesale price ceiling shall not be violated. *See* Section III.D.4.d.
(4) Demand Considerations: Demand considerations may play a role in establishing a mark-up above TSLRIC.[142] LECs may have discretion to

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139. Tr. 8/31/95 at 403. From equations (1) and (2), the imputation test can be derived:

$$P_r \geq C_r + (P_{BNF} - C_{BNF})$$

Where:

$P_r$ is the price of the retail service
$C_r$ is the incremental cost of the retail service including all costs associated with provisioning the BNF (or service)
$P_{BNF}$ is the wholesale price of the BNF (or service)
$C_{BNF}$ is the incremental cost of provisioning the BNF (or service) at wholesale
$(P_{BNF} - C_{BNF})$ is the wholesale "mark-up" or "contribution"

140. Weiss pf. at 4. This rule establishes a price floor at least equal to the average incremental costs of service. All costs, including a share of fixed costs, should be reflected in the average. This does not imply, however, that the rate design should necessarily recover fixed costs in rates that are volume- or usage-sensitive (*e.g.*, minutes of use). Indeed, the fifth of these principles would generally argue against such rate design (though even here, practicality and other concerns may obtrude: as the Board noted elsewhere, in rate design "large doses of good judgment and common sense are needed"). Docket 5426, Order of 7/22/92 at 21, fn. 27.

141. Ankum pf. at 8.

142. Taylor pf. at 29; Ankum pf. at 18.

propose prices for wholesale service that reflect these demand considerations.[143]

(5) Pricing to Reflect Cost Drivers: Ideally, rate design should reflect the underlying character of cost causation, *e.g.*, traffic-sensitive rates should generally not be associated with traffic-insensitive drivers.[144]

(6) Cost of Service: Finally, the overall level of retail rates and wholesale rates shall be set to recover the overall cost of service (including joint, common costs, and historic accounting costs potentially above TSLRIC) as determined through a regulatory rate-setting proceeding or as determined through an incentive regulatory regime.[145]

Relief from these pricing constraints and guidelines may be appropriate once it has been determined that the market for particular wholesale services is competitive. A local exchange carrier may petition the Board at any time for relief from one or all of these restrictions if it can demonstrate that the market is adequately competitive to protect the interests of consumers and that there is no longer a potential for cross-subsidies from its non-competitive services.[146]

i. Treatment of the Mark-Up

Some parties advocate that an additional constraint on the pricing of certain essential services be adopted.[147] Specifically, the ATP recommend that prices for certain essential services be set at their TSLRICs and that no mark-up for the LEC's (or, in the case of facilities-based competitors, the CLEC's) joint and common costs be included in that price.[148]

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143. The pricing of wholesale services will need to recognize that facilities-based competition is likely to create an even greater challenge to the ability of LECs to recover their joint and common costs.

144. Ankum pf. at 16-17.

145. This permits recovery of costs over TSLRIC that the Board finds to be just and reasonable. Raymond pf. at 24-26, 31; Riggert pf. at 4; Salvatore pf. at 7; tr. 8/28/95 at 44-45; tr. 8/30/95 at 244; Taylor pf. at 29. It has been asserted by many of the parties in this investigation that the TSLRIC is below the overall cost of providing service, including joint and common costs. Tr. 7/27/95 at 55; tr. 8/28/95 at 109. This, however, remains to be seen.

146. In Phase III, the parties should be prepared to develop and recommend criteria for determining whether a particular market is competitive.

147. Frontier Brief at 21-22; tr. 8/29/95 at 222; Cornell pf. reb. at 10.

148. Cornell reb. pf. at 10; tr. 7/27/95 at 33-34; tr. 8/28/95 at 144-148; exh. H-1 at 7; *see also* ATP Brief at 2-3 and Frontier Brief at 22. ATP witness Cornell also argued that mark-ups in the prices of intermediate goods, based on the elasticities of demand facing the wholesale supplier itself, will serve neither of the economic objectives of static and dynamic efficiency in downstream retail markets. Cornell reb. pf. at 7-8. I do not take Dr. Cornell's argument here as a blanket prohibition against wholesale mark-ups, but simply as a rejection of a

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ATP witness Cornell argued that "The full benefits of competition will come to consumers only if *all* of the costs of the incumbent local exchange providers are subjected to market pressures for greater efficiency."[149] The ATP assert that:

> All facilities-based carriers will have joint-and-common costs to recover for their own networks. By allowing these networks to terminate calls on competitors' networks at TSLRIC, the Board will signal that all carriers must ultimately recover their joint-and-common costs from retail customers, which in a competitive market can only be achieved by offering them better service at a lower cost.[150]

They contend that allowing an LEC to include a wholesale mark-up above TSLRIC to recover other costs will eliminate the LEC's incentive to efficiently manage those such costs. Competitors, in contrast, will nevertheless have to recover their own common costs entirely through retail sales, unlike the incumbent.[151] For the reasons that follow, I conclude that the arguments favoring such a pricing constraint are not persuasive.

This problem of common cost recovery is seen in sharper relief by reference to shared costs. Shared costs can be viewed as a subset of common costs, namely those costs that are common to the provision of, say, two services and would be avoided if the firm opted to no longer offer those services. A hypothetical example might be a certain software program resident in a switch, necessary to the provision of two particular essential switching functions and no others. The TSLRIC of each of those functions would not include the economic costs of this software, since this cost is not avoided if the firm ceases providing either function; but the TSLRIC of the two functions *combined* would naturally include these software costs.

What then are the appropriate wholesale prices of the two essential functions? Dr. Cornell's testimony would seem to suggest that price should be set at TSLRIC, neither more nor less; but I do not believe that this is her recommendation. Shared costs of this kind must be recoverable if the firm is to continue providing the essential services: removing them from

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148. (...continued)
method of establishing mark-ups on the basis of firm-specific — rather than industry-specific — elasticities of demand. I concur. Lastly, though she argues that no mark-ups above TSLRIC should be placed on the wholesale prices of any essential services, Dr. Cornell does not assert that mark-ups on non-essential wholesale services are also impermissible. Tr. 8/29/95 at 109-110.

149. Cornell reb. pf. at 10 (emphasis in original). *See also* tr. 8/29/95 at 242.

150. ATP Brief at 6.

151. Frontier Brief at 21; Cornell reb. pf. at 10.

the wholesale price will not subject them to competitive pressure at retail in any meaningful way.[152] The incumbent would be forced to recover these shared costs from its retail customers, thereby raising the price that they see for those functions above the price that competitors' customers would face for the same functions (all else being equal). Consequently, I do not conclude that it is proper to exclude economic shared costs from wholesale pricing, particularly since imputation assures that all providers will pay the same price for the essential functions.[153] *See* Footnote 149, above.

But shared costs differ from common costs: in my example, they are necessary to the provision of the two functions, cannot be reduced or avoided by increased efficiency, and, unlike many common costs, are not marked by the sometime superfluities of the president's desk. The ATP argue that all firms in the market have common costs that they want to recover and that their ability to recover them is a function of their own efficiency and the competitive pressures that they face: "TSLRIC-priced interconnection will, therefore, provide an incentive for all carriers to reduce joint-and-common costs to the most efficient levels."[154]

This is a powerful argument and it has obvious attractions. Its appeal is tempered however by the consideration that, if local exchange interconnection and interLATA switched access are indeed essential services, then they probably remain most efficiently supplied by a single provider.[155] Unlike a firm in a competitive market, whose costs increase as output expands, a firm facing declining costs can only recover its total costs, including joint and common, by charging a price in excess of its TSLRIC for the particular service in question, or by recovering those costs in the prices of other services.[156] The ATP's recommendation

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152. In fact, since this hypothetical assumes that prices are set at TSLRIC, the shared costs themselves represent a legitimate component of the TSLRIC of the two functions combined. This, at least in a static sense, means that those shared costs are themselves most efficient.

153. Tr. 9/29/95 at 109-110, 221. I note, however, that Dr. Cornell's reference to shared costs in her prefiled rebuttal testimony injects some small doubt on this point. Cornell reb. pf. at 13.

154. ATP Brief at 6; tr. 8/29/95 at 220-221; *see also* the testimony of MCI witness Ankum, tr. 8/28/95 at 148-150.

155. Insofar as they are characterized by negatively-sloped marginal, and therefore average, cost curves. Tr. 8/28/95 at 149-150; tr. 8/31/95 at 410, 413.

156. In competitive markets, joint and common cost recovery is not generally an issue, since the firm increases output until it reaches that level where incremental cost equals average cost, and will price accordingly. In such circumstances, price equals TSLRIC, and all costs are recovered. Tr. 8/31/95 at 410, 413.